

Forces and Motion (Physical Science Unifying Concept B)

The laws of motion are used to describe the effects of forces on the movement of objects.

By the end of the grade band:		By the end of the grade band, students know and are able to do everything required in earlier grades and:		By the end of grade band, students know and are able to do everything required in earlier grades and:		By the end of grade band, students know and are able to do everything required in earlier grades and:		
Grades K - 2		Grades 3 - 5		Grades 6 - 8		Grades 9 - 12		
P.2.B	Students understand that position and motion of objects can be described.	P.5.B	Students understand that forces can change the position and motion of an object.	P.8.B	Students understand that position and motion of an object result from the net effect of the different forces acting on it.	P.12.B	Students understand the interactions between force and motion.	
P.2.B.1	Students know the position and motion of an object can be changed by pushing or pulling. E/S	P.5.B.1	Students know that, when an unbalanced force is applied to an object, the object either speeds up, slows down, or goes in a different direction. E/S	P.8.B.1	Students know the effects of balanced and unbalanced forces on an object's motion. E/S	P.12.B.1	Students know laws of motion can be used to determine the effects of forces on the motion of objects. E/S	Motion
P.2.B.2	Students know things move in many different ways and at different speeds (e.g., straight line, zigzag, vibration, circular motion, fast/slow). E/S	P.5.B.2	Students know how the strength of a force and mass of an object influence the amount of change in an object's motion. E/S			P.12.B.2	Students know magnetic forces and electric forces can be thought of as different aspects of electromagnetic force. I/S	
P.2.B.3	Students know magnets can be used to make some things move without being touched. E/S	P.5.B.3	Students know a magnetic force causes certain kinds of objects to attract and repel each other. E/S	P.8.B.2	Students know electric currents can produce magnetic forces and magnets can cause electric currents. E/S	P.12.B.3	Students know the strength of the electric force between two objects increases with charge and decreases with distance. I/S	Forces
P.2.B.4	Students know things fall to the ground unless something holds them up. E/S	P.5.B.4	Students know electrically charged particles can attract or repel other electrically-charged material (eg., static electricity). E/S			P.12.B.4	Students know the strength of the gravitational force between two objects increases with mass and decreases rapidly with distance. I/S	
P.2.B.5	Students know Earth's gravity pulls any object toward it without touching it. E/S	P.5.B.5	Students know Earth's gravity pulls any object toward it without touching it. E/S	P.8.B.3	Students know every object exerts gravitational force on every other object, and the magnitude of this force depends on the mass of the objects and their distance from one another. I/S			